



Illinois Department of Transportation

Memorandum

To: DIRECTORS, DEPUTY DIRECTORS, AND BUREAU CHIEFS
From: Dianna L. Taylor
Bureau Chief of Personnel Management
Subject: Technical Vacancy
Date: September 22, 2015

Attached are the Position Summary Sheet and Position Description for the vacant technical position listed below. Please post this vacancy announcement September 23, 2015 in the designated areas.

The deadline for applicants to submit their names for consideration is **4:30 p.m.** on **Tuesday, October 6, 2015**. Applicants will not be accepted after that time and date.

NOTE: A copy of each applicant's ACTIVE Illinois Professional Engineer License must accompany application for this position.

All applicants will receive a position description for the position they are applying for. If you have any questions, please contact Halie Zulauf or Denise Hamilton at 217/782-5594.

CE V

Hydraulics Engineer
Region 4/District 6/Program Development
Highways
Springfield

Attachments
40515

Technical Applications (PM 1080) **must be received** by the Bureau of Personnel Management, Room 113, 2300 South Dirksen Parkway, Springfield, IL 62764 (Fax# 217/557-3134) by **Tuesday, October 6, 2015, 4:30 p.m.** Please include address, daytime phone and position for which applying if not already listed on application. Applicants will be notified in writing to schedule interviews.

NOTE: A copy of each applicant's ACTIVE Illinois Professional Engineer License must accompany application for this position.



Illinois Department of Transportation

An Equal Opportunity Employer

Position Summary Sheet

Classification: Civil Engineer V

Salary Range: \$6,315 - \$10,210

Position Title: Hydraulics Engineer

Union Position: ☒ Yes ☐ No

Position Number: PW115-23-56-303-10-01

IPR#: 40515

Office/Central Bureau/District/Work Address:

Division of Highways /Region 4 / District 6 / Program Development / 126 E Ash St, Springfield, IL

Description Of Duties:

This position is responsible for the preparation of Hydraulic Studies used for the proper sizing of bridges and culverts over waterways; requires extensive knowledge of hydraulics and local conditions in order to develop adequate drainage systems which will not adversely affect adjacent land owners; reviews drainage systems as part of private/commercial development plans.

Special Qualifications:

The following criteria is required:

- Current Illinois Professional Engineer license
- Districtwide travel

The following criteria is desired:

- Nine years of experience in civil engineering of which at least five years should be in the specific area of highway engineering, three years of which should have been supervising engineering functions
- Extensive knowledge of the principles and practices of civil engineering
- Ability to develop and maintain cooperative relationships with departmental staff
- Strong oral and/or written communication skills

Shift/Remarks:

8:00 am – 4:30 pm / Monday – Friday

***THIS POSITION IS COVERED UNDER THE REVOLVING DOOR PROHIBITION (RDP) POLICY.**

**ILLINOIS DEPARTMENT OF TRANSPORTATION
POSITION DESCRIPTION**

DATE:	August 2015	POSITION:	Hydraulics Engineer
APPROVED BY:	<i>Roger Driskell</i>	OFFICE/DIVISION:	Division of Highways/Program Development
CODE:	PW115-23-56-303-10-01	REPORTS TO:	Studies & Plans Engineer

Position Purpose

This position is accountable for Improving highway safety and operational effectiveness while minimizing and adverse environmental impact in area adjacent to highway drainage projects.

Dimensions

Staff:	4 direct; 5-10 consultants; 1-3 seasonal
Annual Plan Development:	8-12 in-house projects; 5-30 consultant plans
Annual Plan Value:	\$40-80 million

Nature and Scope

This position reports to the Studies and Plans Engineer as do the Project Engineers, the Environmental Studies Unit Chief, the Geometrics Engineer, the CADD Unit Chief and Executive Secretary. Reporting to this position is an Associate Hydraulic Engineer. Other personnel may report to this position on a seasonal basis. In addition, this position supervises consulting engineering firms performing hydraulic studies.

This position is responsible for the preparation of Hydraulic Studies. This position is unique because hydraulic designs are specialized areas which require specific training and expertise in addition to the knowledge of roadway design. The incumbent develops adequate justification and research to provide sufficient creditability to local agencies and municipalities concerned with possible adverse effects to drainage systems in their area caused by proposed highway improvements. Extensive highways systems are subject to critical hydrologic/hydraulic evaluations. Hydrologic and hydraulic studies for all projects qualifying for federal aid or requiring federal action must include an evaluation of all encroachments into a 100 year frequency floodplain. This position is responsible for the proper sizing of bridges and culverts over waterways requiring extensive knowledge of hydraulics and local conditions in order to develop adequate drainage systems which will not adversely affect property owners.

Typical problems include developing timetables for the timely completion of assigned projects, maintaining the flexibility needed to accommodate changes in priorities and/or implement additions/deletions from the program and adjusting to seasonal fluctuations in available staffing. The greatest challenge is resolving technical problems to ensure construction letting deadlines and plan preparation for hydraulic improvements are met and completed in the most cost efficient manner.

This position personally coordinates a staff which reviews proposed projects; prepares mark-ups, when asked, for adequate surveys relative to drainage; calculates design runoff, velocities and hydraulic opening for proposed highway structures and prepare Hydraulic Reports. This report includes probable risks, floodplain environmental impacts and possible measures to mitigate impacts. In addition, s/he develops and reviews storm water systems for state highway systems; designs culverts, stilling basins, proper riprap to minimize erosion and retention basins to control high water; reviews private/commercial development plans that are adjacent to highways which might affect the state's drainage system and maintains records of peak high water occurrences. The incumbent provides hydraulic expertise for immediate solution to on-site drainage problems for the District. This position confers with other agencies and land owners to solve local drainage

problems which require the explanation of complex drainage systems. Failure to convince local land owners of the Department's intent can often lead to a delay in the project.

As the incumbent is considered the District expert for hydraulics and drainage systems, s/he serves as expert witness in litigation involving the State. The incumbent provides training relative to hydrology and hydraulics. Considerable amounts of review of research publications, special drainage reports and pertinent literature on products is required. This position is responsible for maintaining awareness of the latest drainage method developments and reviews new material for updating the Department's Drainage Manual. S/He performs some scour analysis for waterway crossings, oversees scour analysis done by subordinates and consultants and must maintain awareness of changing scour analysis techniques. This position serves on the chairperson of a scour team whose function is to analyze all bridges over waterways for scour potential and recommend corrective measures if necessary.

Responsibilities are accomplished with the assistance of:

Assistant Hydraulic Engineer – who is responsible for preparing Hydraulic Reports, reviewing Drainage studies, assists other personnel in the Department with drainage calculations, reviews the effect of new commercial development on the State's drainage system and responds to drainage inquiries by local land owners.

The incumbent has considerable latitude in accomplishing the objectives utilizing state-of-the-art knowledge of hydraulics and sound engineering practices and judgment. S/He operates within the limits of prescribed departmental/federal design standards and specifications, hydraulic design policies, the Illinois Highway drainage policies/practices and the Division of Natural Resources Regulatory (DNR) Program. S/He has wide latitude in the design of structures within the parameters set by the DNR Regulatory Program. Certification by the Central Bureau of Bridges and Structures, Hydraulics Section, allows this position to approve, without central office concurrence, hydraulics studies for all superstructure replacements, and bridge widening and structure replacement for those structures not requiring a permit from the DNR. This position also has the authority to perform final reviews of multiple cell box culverts. The incumbent recommends, for approval to the section chief, design solutions for resolving conflicting situations and highly technical problems.

Internal contacts include other sections within the Bureau of Program Development for coordination of surveying, traffic data, cost estimates, utility adjustments, right-of-way needs and agreements for structure related improvements. Also the Bureau of Project Implementation, Materials Section, for the development of structure boring logs; the Bureau of Operations to obtain data for existing structures; and the Central Bureaus of Bridges and Structures and Design. External contacts include the DNR, the Illinois Environmental Protection Agency, the Federal Highway Administration, the U.S. Corps of Engineers, the U.S. Geological Survey, the U.S. Coast Guard as well as counties and municipalities, levee district, consultants and the general public. Districtwide travel is required to perform the duties of this position.

The effectiveness of this position is measured by the incumbent's ability to provide direction to departmental and consulting staff in responding promptly and effectively to drainage problems, meeting established project schedules and obtaining acceptance of drainage plans by the central office and public/local agencies which facilitate the letting of construction contracts on established schedules and within the restraints of programmed funding.

Principal Accountabilities

1. Supervises the development of hydraulic reports by district staff and consultants which are utilized to evaluate the scope of work and structure type, size and location (TS&L). Ensures the accuracy and

conformance with state policies and timely completion of all assignments and correlation of work with other agencies.

2. Grants final approval on the hydraulic reports for all superstructure replacements and bridge widening, box culverts and all bridges not requiring a DNR construction permit. Provides final approval of hydraulic calculations for highway access permits.
3. Serves as district technical expert to all internal/external sources relative to hydrology, bridge design and hydraulics.
4. Conducts scour analysis studies to determine susceptibility for flow line degradation and scour.
5. Provides for continuous and effective communication with local/federal agencies and affected property owners to ensure highway drainage proposals are coordinated and properly addresses rules, regulations and concerns. Obtains required permits for bridge construction for federal/state agencies.
6. Maintains state-of-the-art knowledge on hydraulics and hydrology related to both standard and complex transportation systems.
7. Trains and motivates staff to ensure a well-developed, competent staff: ensures compliance with departmental safety rules.
8. Performs duties in compliance with departmental safety rules. Performs all duties in a manner conducive to the fair and equitable treatment of all employees.
9. Performs other duties as assigned.